

## CLAIMS

We claim:

1           1. A purge gas saver for a brazing installation, comprising:  
2           a valve housing having a purge gas inlet passage, a purge gas  
3           outlet passage, and an intermediate gas passage orthogonal to and  
4           disposed between the inlet and outlet passages defined in the  
5           housing;

6           a plunger having an upper end with a threaded opening and a  
7           lower end, the plunger being slidably disposed in the intermediate  
8           passage, said plunger adjustable between an open position and a  
9           closed position;

10          an adjustment screw threadably engaged in the threaded  
11          opening of said plunger and extending from the upper end of the  
12          plunger; and

13          a compression spring disposed beneath the plunger inside of  
14          the intermediate gas passage, the spring biasing the plunger to an  
15          open position in order to permit a purge gas to flow through the  
16          valve housing from the inlet passage to the outlet passage;

17          wherein, the valve housing is adapted for attachment to a  
18          dual valve brazing installation for controlling flow of a fuel gas  
19          and oxygen with the adjustment screw disposed below a torch hanger  
20          arm of the brazing installation so that depressing the hanger arm  
21          depresses the plunger against the spring to block passage of the  
22          purge gas through the valve housing, whereby flow of the purge gas  
23          is controlled simultaneously with flow of the fuel gas and oxygen.

1           2. The purge gas saver according to claim 1, wherein the  
2 inlet passage further comprises a threaded inlet opening disposed  
3 on a first side of said valve housing.

1           3. The purge gas saver according to claim 2, wherein the  
2 outlet passage further comprises a threaded outlet opening  
3 disposed on a side of said valve housing opposite the threaded  
4 inlet opening.

1           4. The purge gas saver according to claim 1, wherein the  
2 intermediate gas passage comprises a threaded cavity defined in a  
3 top surface of said housing.

1           5. The purge gas saver according to claim 1, wherein said  
2 plunger further comprises an annular flange disposed about the  
3 lower end of the plunger, the flange having a diameter slightly  
4 less than the intermediate passage, the flange forming a seal  
5 against the intermediate passage.

1           6. The purge gas saver according to claim 1, further  
2 comprising a sealing ring resting inside of the intermediate  
3 passage and mating with the lower end of the plunger to ensure the  
4 intermediate passage is sealed.

1        7.     The purge gas saver according to claim 1, further  
2 comprising a threaded fitting for holding the plunger inside of  
3 the valve housing, the threaded fitting engaging the threaded  
4 cavity disposed on the top surface of the valve housing, the  
5 fitting having an opening through the center thereof for allowing  
6 the adjustment screw to pass through the fitting to engage the  
7 opening in the upper end of the plunger.

1        8.     The purge gas saver according to claim 1, further  
2 comprising an o-ring disposed around the upper end of the plunger  
3 to provide an additional seal between the threaded cavity and the  
4 fitting.

1        9.     The purge gas saver according to claim 1, further  
2 comprising a hex nut adjustably secured to the adjustment screw  
3 for limiting the movement of the plunger.

1        10.    The purge gas saver according to claim 2, further  
2 comprising a threaded inlet fitting engaged in the inlet opening  
3 having a pressure reducing orifice disposed through its center for  
4 reducing the pressure of the purge gas delivered through the valve  
5 housing.

11. A purge gas saving brazing installation, comprising:

a dual torch gas shutoff valve for controlling the flow of fuel and oxygen through the brazing installation;

dual inlet lines disposed on a first side of the gas shutoff valve for supplying fuel and oxygen to the shutoff valve;

dual outlet lines disposed on a side of the gas shutoff valve opposite the inlet lines for delivering fuel from the shutoff valve;

a brazing torch having a first end with a torch tip disposed thereon and a second end having a pair of torch fittings disposed thereon, whereby the dual outlet lines are secured to the torch fittings to supply fuel and oxygen from the gas shutoff valve to the brazing torch, the oxygen and fuel each flowing through separate lines and then mixing inside of the brazing torch;

a pivot arm having a hook end for supporting the brazing torch, the pivot arm being secured to the shutoff valve by a bracket that is pivotally mounted on the dual shutoff valve and movable to open and close the fuel and oxygen supplies to the brazing torch;

a valve housing having a purge gas inlet passage, a purge gas outlet passage, and an intermediate gas passage orthogonal to and disposed between the inlet and outlet passages defined in the housing;

a plunger having an upper end with a threaded opening and a lower end, the plunger being slidably disposed in the intermediate passage, said plunger adjustable between an open position and a closed position;

28 an adjustment screw threadably engaged in the threaded  
29 opening of said plunger and extending from the upper end of the  
30 plunger; and

31 a compression spring disposed beneath the plunger inside of  
32 the intermediate gas passage, the spring biasing the plunger to an  
33 open position in order to permit a purge gas to flow through the  
34 valve housing from the inlet passage to the outlet passage;

35 wherein, the valve housing is adapted for attachment to a  
36 dual valve brazing installation for controlling flow of a fuel gas  
37 and oxygen with the adjustment screw disposed below the pivot arm  
38 of the brazing installation so that depressing the pivot arm  
39 depresses the plunger against the spring to block passage of the  
40 purge gas through the valve housing, whereby flow of the purge gas  
41 is controlled simultaneously with flow of the fuel gas and oxygen.

1 12. The brazing installation according to claim 11, wherein  
2 the inlet passage further comprises a threaded inlet opening  
3 disposed on a first side of said valve housing.

1 13. The brazing installation according to claim 12, wherein  
2 the outlet passage further comprises a threaded outlet opening  
3 disposed on a side of said valve housing opposite the threaded  
4 inlet opening.

1 14. The brazing installation according to claim 11, wherein  
2 the intermediate gas passage comprises a threaded cavity defined  
3 in a top surface of said housing.

1        15. The brazing installation according to claim 11, wherein  
2 said plunger further comprises an annular flange disposed about  
3 the lower end of the plunger, the flange having a diameter  
4 slightly less than the intermediate passage, the flange forming a  
5 seal against the intermediate passage.

1        16. The brazing installation according to claim 11, further  
2 comprising a sealing ring resting inside of the intermediate  
3 passage and mating with the lower end of the plunger to ensure the  
4 intermediate passage is sealed.

1        17. The brazing installation according to claim 11, further  
2 comprising a threaded fitting for holding the plunger inside of  
3 the valve housing, the threaded fitting engaging the threaded  
4 cavity disposed on the top surface of the housing, the fitting  
5 having an opening through the center thereof for allowing the  
6 adjustment screw to pass through the fitting to engage the opening  
7 in the upper end of the plunger.

1        18. The brazing installation according to claim 11, further  
2 comprising an o-ring disposed around the upper end of the plunger  
3 to provide an additional seal between the threaded cavity and the  
4 fitting.

1        19. The brazing installation according to claim 11, further  
2 comprising a hex nut adjustably secured to the adjustment screw  
3 for limiting the movement of the plunger.

1        20. The brazing installation according to claim 12, further  
2 comprising a threaded inlet fitting engaged in the inlet opening  
3 having a pressure reducing orifice disposed through its center for  
4 reducing the pressure of the purge gas delivered through the valve  
5 housing.